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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,295	01/23/2004	Thomas Volkel	2001P07053WOUS	8259
7590 09/02/2005				
SIEMENS CORPORATION INTELLECTUAL PROPERTY DEPT. 170 WOOD AVENUE SOUTH ISELIN, NJ 08830				
			EXAMINER WEST, JEFFREY R	
			ART UNIT 2857	PAPER NUMBER

DATE MAILED: 09/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/764,295

Applicant(s)

VOLKEL, THOMAS

Examiner

Jeffrey R. West

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/23/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of Applicant's claim for foreign priority based on an application filed in Germany on August 08, 2001. It is noted, however, that Applicant has not filed a certified copy of the 10138919.1 application as required by 35 U.S.C. 119(b).

Drawings

2. The drawings in Figures 1-6 are objected to as not containing sufficiently descriptive labels. It is suggested that Applicant label the axes and provide descriptive titles to indicate to one having ordinary skill in the art what is being displayed.
3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the method steps as claimed must be shown in the drawings, using for example a flow chart, or the feature(s) canceled from the claim(s). No new matter should be entered.
4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended."

If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The abstract of the disclosure is objected to because its length exceeds the 150-word limit. Correction is required. See MPEP § 608.01(b).

The abstract is also objected to because in line 8, "alarm cure" should be ---alarm curve---.

Claim Objections

6. Claim 1 is objected to because of the following informalities:

In claim 1, line 1, to avoid problems of antecedent basis, "the spectral" should be ---spectral---.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is considered to be vague and indefinite because it recites, "spectral evaluation of an object to be tested in operating states characterized by operating parameters". In this limitation, it is unclear to one having ordinary skill in the art as to what "characterized by operating parameters" is attempting to further limit. This limitation already describes "spectral evaluation", "an object to be tested" and "operating states". Therefore, it is unclear whether the operating parameters characterize the "spectral evaluation", "object to be tested" or "operating states".

Claim 1 is further rejected under 35 U.S.C. 112, second paragraph, because it recites "automatically changing the second amplitude values of the alarm curve according to the operating parameters". Claim 1 mentions "operating parameters" in the preamble of the claim, but only defines "a first operating parameter that is an actual rotational speed value". Therefore, it is unclear to one having ordinary skill in the art whether the "operating parameters" refer to more than one actual rotation speed or if these "operating parameters" refer to some other undefined "operating parameters".

Claims 2-17 are rejected under 35 U.S.C. 112, second paragraph, because they incorporate the lack of clarity present in parent claim 1.

Claim 3 is further rejected under 35 U.S.C. 112, second paragraph, because it attempts to further limit claim 1 by specifying "a third operating parameter which is proportional to a temperature of the object to be tested". Claim 1, however, only presents a "first operating parameter". Therefore, it is unclear to one having ordinary skill in the art why this second parameter is introduced as a "third" operating parameter.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-4, 6-9, 11, 12, 16 and 17, as may best be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over International Application Publication No. 99/60351 to Lofall in view of European Patent Application Publication No. 0 908 805 to Hoth et al.

Lofall discloses a method for spectral evaluation of an object to be tested in operating states characterized by operating parameters comprising providing a first operating parameter that is an actual rotational speed value (page 29, lines 4-6 and

page 30, lines 18-19), automatically (page 19, lines 17-19) recording a frequency spectrum of the object to be tested by measuring means, wherein the frequency spectrum has first amplitude values which depend on first frequency values (page 26, lines 3-17), automatically using the first frequency values of the frequency spectrum for normalization in relation to the actual rotational speed value (page 30, lines 9-23), automatically forming an alarm curve with second amplitude values which depend on second frequency values (page 30, lines 24-31), automatically using the second frequency values of the alarm curve for normalization in relation to the actual rotational speed value (page 30, line 32 to page 31, line 8), automatically comparing the first amplitude values of the normalized frequency spectrum with the second amplitude values of the normalized alarm curve (page 31, lines 8-10), and using a result of the comparison to evaluate the object to be tested (page 31, lines 10-12).

Lofall discloses that the measuring means are fashioned as vibro-acoustic measuring means (page 6, lines 21-24)

Lofall discloses that the method is used for a spectral evaluation of a machine (page 7, lines 15-18) or monitoring the vibration of vehicle components (page 34, line 1).

As noted above, Lofall teaches many of the features of the claimed invention and while the invention of Lofall does teach the option of including additional operating parameters of current load and temperature values in the vibration analysis (page 30, lines 5-8, page 32, line 27 to page 33, line 19, and page 38, lines 26-29), Lofall

does not explicitly teach automatically changing the second amplitude values of the reference spectrum according to the operating parameters.

Hoth teaches a method and apparatus for performing pre-emptive maintenance on operating equipment including detecting vibration, machine load, and temperature parameters (column 5, lines 17-24) for the analysis of a rotary machine (column 5, lines 6-10), monitoring the vibration data for failure analysis (column 8, lines 12-20) and comparing the vibration data to reference/norm data (column 3, lines 30-36), wherein the amplitude values of the reference/norm data are changed according to a function of the operating parameters of load and temperature (column 9, lines 27-35).

It would have been obvious to one having ordinary skill in the art to modify the invention of Lofall to explicitly teach automatically changing the second amplitude values of the reference spectrum according to the operating parameters, as taught by Hoth, because, as suggested by Hoth the combination would have insured that the current vibration data obtained and the reference data used for comparison both reflect the same operating conditions of load and temperature (column 9, lines 27-35), thereby improving the accuracy of the fault detection by insuring that a false alarm is not detected due to differences in the vibration data caused by load and temperature differences.

11. Claims 5, 10, and 13-15 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Lofall in view of Hoth and further in view of International Application Publication No. 96/13011 to Haseley et al.

As noted above, the invention of Lofall and Hoth teaches many of the features of the claimed invention and while the invention of Lofall and Hoth does teach generating an alarm curve, wherein when an average plus sigma threshold above the alarm curve in a fault-free normal condition is set as an alarm limit (Lofall, page 31, lines 2-12), the combination does not explicitly state that an envelope curve is formed over the vibration spectrum, wherein an alarm is generated if at least one amplitude value of the normalized frequency spectrum lies outside the envelope curve, or explicitly state that the user define the function of the operating parameters.

Haseley teaches a vibration monitoring system comprising means for determining vibration data in the form of rotational speed (page 5, lines 27-35) of a machine or vehicle (page 5, lines 9-16), transforming the vibration data to spectral data using a FFT (page 6, lines 13-21) and generating an alarm (page 7, lines 27-30) when at least one amplitude value of the frequency spectrum lies outside an envelope curve formed over the vibration spectral data (page 9, lines 26-35). Haseley further teaches changing the amplitude values of the reference spectrum (i.e. footprint) (page 11, lines 19-22) as a user-specified function of load operating parameters (page 9, lines 15-25).

It would have been obvious to one having ordinary skill in the art to modify the invention of Lofall and Hoth to explicitly state that an envelope curve is formed over

the vibration spectrum, wherein an alarm is generated if at least one amplitude value of the normalized frequency spectrum lies outside the envelope curve, as taught by Haseley, because, as suggested by Haseley, the combination would have improved the alarm detection of Lofall and Hoth as well as aided the alarm monitoring by a user through a detailed display, by providing a clear representation, and clearly defined, alarm limit indicating the vibration maximum levels (page 7, lines 27-30, page 9, lines 26-35, and Figure 2).

Further, it would have been obvious to one having ordinary skill in the art to modify the invention of Lofall and Hoth to explicitly specify that the user define the function of the operating parameters, as taught by Haseley, because Haseley suggests that the combination would have allowed the user to improve the analysis desired by providing the user with greater control over the effect of the operating parameters (page 9, lines 15-25).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

U.S. Patent No. 4,528,852 to Sohoel teaches a method and instrument for determining the condition of an operating bearing comprising eliminating the influence of rotational speed on the data measurements.

U.S. Patent No. 6,233,212 to Kaaden teaches monitoring and adjusting a motor current in a disk data drive to optimize a disk rotation speed including means for normalizing stored nominal values of motor current for determined rotational speeds.

U.S. Patent No. 4,958,125 to Jardine et al. teaches a method and apparatus for determining characteristics of the movement of a rotating drill string including rotation speed and lateral shocks including means for normalizing the measurement spectrum to a constant rotation speed of the drill bit.

U.S. Patent No. 6,321,602 to Ben-Romdhane teaches condition based monitoring by vibrational analysis wherein the vibrational spectrum is normalized with respect to a shaft RPM to result in a comparison of frequencies relative to the shaft RPM.

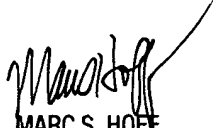
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (571)272-2226. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571)272-2216. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2857

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jrw
August 22, 2005


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